

REMARKS

This application pertains to a novel process for separating solids, such as catalysts, present in dissolved or colloidal form from solutions in a nonaqueous solvent with the aid of a membrane.

The membrane used in Applicants' process has a hydrophobic coating. The hydrophobic coating is produced on the membrane by treatment with silanes (page 4, line 7). The silanes used are those of the general formula $R_1R_2R_3R_4Si$, wherein at least one but at most three of the groups R_1 to R_4 are hydrolyzable groups, e.g. $-Cl$, $-OCH_3$ or $-O-CH_2-CH_3$ and/or at least one but at most three of the groups R_1 to R_4 are nonhydrolyzable groups, e.g. alkyl groups or phenyl groups.

Claims 1-8 and 10-17 are pending.

The Examiner has indicated that the English abstract of EP 0 263 953 is not sufficient to understand the relevance of the reference to the claimed subject matter.

Applicants have now obtained a machine translation of EP 0 263 953, and are submitting a further IDS for this reference with the machine translation included. Consideration of this reference is respectfully requested.

Turning now to the substance of the Office Action, claims 1, 3-11, and 15-17 stand rejected under 35 U.S.C. 102(b) as anticipated by Cohen (US 6,440,309).

Applicants' claims recite a process for the separation of a substance that is **dissolved** in a non-aqueous solvent or is present in the non-aqueous solvent **in colloidal form**. Applicants' accomplish this separation by passing the non-aqueous solvent through a membrane that has a **hydrophobic coating formed by reaction of the membrane surface with a silane of the formula $R_1R_2R_3R_4Si$** .

The Cohen reference does not separate a substance that is dissolved in a non-aqueous solvent, and does not use a membrane that has a hydrophobic coating formed by reaction of the membrane surface with a silane of the formula $R_1R_2R_3R_4Si$.

Cohen is concerned with pervaporation, which is a completely different process, which does not separate dissolved substances or substances in colloidal form from a solvent. Pervaporation, as explained by Cohen at col. 1, lines 5-16, is a process wherein a liquid **mixture** (i.e., a mixture of liquids) is separated by passing one of the liquids (the permeate) through a membrane in vapor form, and then condensing it on the other side of the membrane. This is

not a process whereby a dissolved substance or a substance in colloidal form is separated from a solvent.

Furthermore, Cohen “activates” the surface of a ceramic support membrane or filter with a vinyl loweralkoxy silane (col. 6, lines 1-3), and then a polymeric membrane is formed on top of the ceramic support membrane by graft polymerization onto the silane, whereby the polymer is “anchored” to the silane (chemically bonding a vinyl polymer onto the activated ceramic support surface (col. 8, lines 33-45)). The resulting polymeric membrane is coated on top of the ceramic support and the silane as well.

Therefore, Cohen’s process concerns passing his vapor substances through a polymeric membrane, and not a membrane having a hydrophobic coating formed by reaction of the membrane surface with a silane of the formula $R_1R_2R_3R_4Si$. Whatever product results from the “activation” with Cohen’s silane no longer exists in the process, as the polymer is graft polymerized onto that product.

Accordingly, the Cohen reference teaches neither Applicants’ separation process nor Applicants’ membrane.

The Cohen reference cannot in any way be seen as teaching or suggesting Applicants’ process, and the rejection of claims 1, 3-11, and 15-17

under 35 U.S.C. 102(b) as anticipated by Cohen (US 6,440,309) should now be withdrawn.

Claims 2 and 12-14 stand rejected under 35 U.S.C. 102(b) as anticipated by Cohen, or in the alternative, under 35 U.S.C. 103(a) as obvious over Cohen as applied to claim 1 above and further in view of WO 01/07157. The anticipation branch of this rejection is predicated on the Examiner's conclusion that the membrane used in Cohen is the same as that claimed by Applicants. As shown above, however, the two membranes are not the same, and the anticipation branch of this rejection should be withdrawn for at least that reason. As for the obviousness branch of this rejection, the Examiner relies on the WO reference for what he sees as a teaching of a ceramic membrane with a hydrophobic coating. The Examiner specifically points to page 7 of the WO reference for a teaching of a hydrophobic coating on a ceramic membrane.

No such teaching or suggestion can be found, however. The WO reference describes specific membrane materials, such as ceramic, metal and polymeric (page 7), but nowhere teaches or suggests applying a hydrophobic coating to said membranes. In the paragraph bridging pages 10 and 11, the WO reference discloses the concept of forming a membrane on a macroporous support; but this is quite different than applying a hydrophobic coating to a ceramic membrane. The membranes of the WO reference are not coated with any hydrophobic coating.

It is not seen how the teaching of the WO reference could possibly be applied to Cohen but, even if it were, Applicants novel process could not possibly be arrived at. Cohen teaches to form a polymeric membrane by graft polymerization upon a silane anchoring material which itself is chemically attached to the surface of a ceramic membrane by a silation reaction. Certainly the WO references ceramic or metal membranes could not be graft polymerized to Cohen's silane treated ceramic support membrane. That leaves just the polymeric membranes of the WO reference; but Cohen already has polymeric membranes!

So, the only thing that appears transferable from the WO reference to Cohen would be the use of Cohen's polymeric membrane for separation of catalysts from a reaction mixture such as those described in the WO reference. This, however, would not arrive at Applicants' process, as this combination of references would still result in a process based on the use of a polymeric membrane.

Accordingly, no combination of Cohen and the WO reference could ever lead to Applicants' novel process, and the rejection of claims 2 and 12-14 under 35 U.S.C. 102(b) as anticipated by Cohen, or in the alternative, under 35 U.S.C. 103(a) as obvious over Cohen as applied to claim 1 above and further in view of WO 01/07157 should now be withdrawn.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicants request that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit Account No. 14-1263.

Respectfully submitted,
NORRIS, McLAUGHLIN & MARCUS, PA

By William C. Gerstenzang/
William C. Gerstenzang
Reg. No. 27,552

WCG/tmh

875 Third Avenue - 18th Floor
New York, New York 10022
(212) 808-0700

Enclosure: Machine translation of EP O 263653 (4 pages)